

LISTING OF THE CLAIMS

This listing of claims, including the amendments indicated below, is intended to replace all prior versions, and listings, of claims in the application

1. (Canceled)
2. (Currently Amended) An apparatus as claimed in claim 24, including a collection of piezoelectric ceramic material contained in each sensing section for piezoelectrically detecting the force exerted on that sensing section.
3. (Currently Amended) An apparatus as claimed in claim 24, including a transmitting material comprising a plurality of individual electrical conductors coupled to the force sensor such that positions of the electrical conductors coincide with positions of the force sensing sections and channel current produced by each respective sensing section to a respective output terminal.
4. (Original) An apparatus as claimed in claim 3, wherein the transmitting material is coupled to an electronic circuit to which the output terminals are connected for measuring the current produced by each sensing section.
5. (Original) An apparatus as claimed in claim 3, wherein the transmitting material is a polyimide film fabricated with a plurality of individual electrical conductors.
6. (Currently Amended) An apparatus as claimed in claim 24, wherein the force sensor is located at an alignment station spaced from the bonding tool, and the bonding tool is positionable onto the alignment station for alignment.
7. (Original) An apparatus as claimed in claim 6, including a biasing member coupled to a sensing surface of the force sensor whereby to exert a preload force on the force sensor.

8. (Currently Amended) An apparatus as claimed in claim 24, wherein the force sensor is coupled to the bonding tool.

9. (Original) An apparatus as claimed in claim 8, wherein the bonding tool includes a collet assembly, and the force sensor is coupled to the collet assembly whereby each sensing section is adapted to detect a reaction force acting on a part of the collet assembly upon application of a force by the bonding tool on a bonding surface.

10. (Original) An apparatus as claimed in claim 9, wherein the force sensor is coupled to the collet assembly axially opposite a point of contact between the collet assembly and the bonding surface.

11. (Original) An apparatus as claimed in claim 9, wherein the collet assembly exerts a preload force on the force sensor.

12. (Currently Amended) An apparatus as claimed in claim 24, wherein the force sensor comprises a ring with a hollow center.

13. (Currently Amended) An apparatus as claimed in claim 24, wherein each sensing area is of substantially equal size.

14-23. (Canceled).

24. (New) An apparatus for aligning a bonding tool, comprising:
a force sensor configured to measure a force generated by the bonding tool on the force sensor, wherein the force sensor comprises a plurality of force sensing sections, the force sensing sections being isolated from each other and configured such that each force section is respectively responsive only to compressive forces applied to it by a portion of the bonding tool in contact

with that force sensing section, and substantially non-responsive to forces applied to the force sensor from parts of the bonding tool not in contact with that force sensing section, the apparatus being responsive to differences between the individually detected forces to generate an alignment signal representing departure of the orientation of the bonding tool from the desired alignment.

25. (New) An apparatus as claimed in claim 24, wherein the sensing area of each sensing section is substantially smaller than the area of contact between the bonding tool and the force sensor as a whole.

26. (New) An apparatus as claimed in claim 24, wherein each sensing element is comprised of bundles of ceramic fibers, one end of each bundle being positioned to engage with the bonding tool during operation, and wherein the sensing area of each bundle is substantially smaller than the total contact area of the bonding tool with the force sensor as a whole.